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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,200	01/20/2004	Katsuji Miyake	247787US0	7580

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EXAMINER

SASTRI, SATYA B

ART UNIT PAPER NUMBER

1713

DATE MAILED: 02/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/759,200	<b>Applicant(s)</b> MIYAKE ET AL.	
	<b>Examiner</b> Satya B. Sastri	<b>Art Unit</b> 1713	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/1/04, 8/16/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

1. This office action is in response to application filed on January 20, 2004. *Claims 1-27* are now pending in the application.

### *Claim Objections*

2. *Claim 17* is objected to for the use of parenthetical expression in the claim language.

### *Claim Rejections - 35 USC § 102 and 103*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. *Claims 1, 12, 13, 18, 19, 23, 24* are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takeuchi et al. (US 5,453,458).

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Takeuchi et al. disclose a core shell polymer comprising a core layer mainly comprising an aromatic monomer and a shell layer comprising 25-95% of aromatic vinyl monomer, 5-40% of unsaturated acid or hydroxyalkyl ester of unsaturated carboxylic acid and an optional third monomer, wherein the core-shell polymer has an average particle size of 0.1-50 micrometer. The disclosure teaches a plastisol comprising the core-shell polymer in a liquid plasticizer for providing films and molded articles (abstract, column 1, lines 5-11).

Instant claims are product by process claims where the polymeric powder is prepared by coagulation followed by drying the latex while the prior art teaches centrifugal dehydration and drying. Where product by process claims are rejected over a prior art product that appears to be the same, the burden is shifted to applicants to establish an unobvious difference, even if the production processes are different. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983). Furthermore, the patentability of a product claim rests on the product formed and not on the method by which it is produced. In re Thorpe, 227, USPQ 984 (Fed. Cir. 1985). In the instant claims, the limitation "percentage of void is 70% or less" may be construed as not having any voids at all.

6. **Claims 2-11, 17, 22, 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US 5,453,458).

The prior art to Takeuchi et al. is elaborated above in paragraph 6 and is incorporated herein by reference.

The difference between the prior art and the instant invention is that the prior art does not teach the specific monomeric composition for the core and shell structure as claimed instantly.

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The prior art discloses monomers used to make up the core in column 4, lines 20-50 and includes methyl methacrylate and crosslinking agent explicitly cited. Additionally, the shell forming monomers may include 25-95% of aromatic vinyl monomer, 5-40% of unsaturated acid or hydroxyalkyl ester of unsaturated carboxylic acid. Optionally, a the third monomer may be useful in amounts of 0-70% to make up the shell with methyl methacrylate explicitly listed as the preferred component (column 6, lines 43-59). The core shell polymer of the invention may contain a shell layer in an amount of 5-7-% by wt., based on the total wt. of the polymer. A two-stage suspension polymerization may result in polymer particle size of 5-50  $\mu\text{m}$  which may be centrifugally dehydrated and dried to provide core-shell polymer in the form of a powder (column 7, lines 52-65). Given the generic teaching of useful monomers for the core-shell polymer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include any of the monomers, including the instantly claimed monomers in appropriate amounts and there by obtain the invention, absent evidence on the criticality of the claimed range.

7. **Claim 1** is rejected under 35 U.S.C. 102(b) as anticipated by Rauch et al. (US 4,892,932).

Rauch et al. disclose spray dried polymer emulsion comprising acrylic resins that are water-soluble (column 3, lines 15-40). The spray dried particles have an average particle size of 50  $\mu\text{m}$ . Instant claims are product by process claims where the polymeric powder is prepared by coagulation followed by drying the latex while the prior art teaches centrifugal dehydration and drying. Since the instantly claimed resin composition and the method of making the polymeric

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powder read on the prior art composition and process or making the same, the product in the prior art must inherently have the claimed void properties.

8. *Claims 1, 3, 5, 7, 9, 11-13* are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (US 5,521,252).

Matsuda et al. disclose multilayer polymer powders containing coagulated powders of emulsified latexes. The particles have a size of 212  $\mu\text{m}$  or less after drying and a volume of gaps of a pore size of 5  $\mu\text{m}$  or less after drying of not more than 0.7 cc per unit weight. The core comprises a soft polymer based on 40-90% of an alkyl acrylate, 10-6-% by wt. of monofunctional monomer and 0.1-10% by wt. of polyfunctional monomer as crosslinking agent (column 2, lines 19-47). The shell comprises 60-100% of alkyl methacrylate and the proportion of outermost layer to the entire polymer is generally from 10 wt.% to 60 wt.% (column 2, lines 64-68, column 3, lines 1-20).

The difference between the prior art and the instant invention is that the prior art teaches a broader particle size than that disclosed in the instant invention.

The prior art discloses a particle size less than 212  $\mu\text{m}$  or less after drying and a volume of gaps of a pore size of 5  $\mu\text{m}$  or less after drying of not more than 0.7 cc per unit weight. One skilled in the art would be motivated to produce particles with small particle size, such as that claimed instantly so as to introduce homogeneity when mixed with other additives. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the prior art process so as to produce particles with small particle size, such as that claimed instantly, and thereby obtain the instant invention.

9. *Claims 14-16, 20, 21, 25, 26* are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (US 5,521,252) in view of Blankenship et al. (US 6,632,531 B2).

The prior art to Matsuda et al. is elaborated above in paragraph 9 and is incorporated herein by reference.

The difference between the prior art and the instant invention is that the prior art does not teach the use of water soluble macromolecule or the use of reactive surfactant in preparing the core-shell latex emulsion.

Protective colloids are routinely used in preparing latex emulsions of acrylic polymers. For instance, the secondary reference to Blankenship et al. concerns aqueous dispersions containing porous polymer particles and discloses the use of suspending agents based on water soluble macromolecules known to one skilled in the art (column 11, lines 35-43). Their use provides for stable latexes as well as aids in the redispersibility of the powder in other media. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the prior art process so as to produce particles with small particle size, such as that claimed instantly, and thereby obtain the instant invention.

With regard to polymerizable surfactants, it is noted that the prior art teaches the use of monomeric surfactants incorporated into the polymeric chain via covalent linkage and it would be obvious to one skilled in the art to incorporate such surfactants in the outer shell so as to influence their stability/dispersibility in the latex.

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10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamauchi et al. (US 6,503,762 B1) cited in Search Report as X reference does not teach the limitation of void volume as less than 0.9 mL/g or less on pore diameters of 1  $\mu$ m or more as claimed instantly.

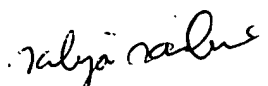
***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satya Sastri at (571) 272 1112.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached at (571) 272 1114.


The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SATYA SASTRI

January 30, 2006



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